

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Previously presented) A method for calibrating an AGC in a MIMO-based system, the method comprising:
  - transmitting a calibration signal;
  - receiving the calibration signal;
  - decoding the calibration signal to produce a measurement;
  - storing the measurement;
  - changing an AGC gain setting; and
  - repeating the transmitting, receiving, decoding, storing, and changing operations to determine an optimal AGC gain setting.
2. (Original) The method of claim 1, wherein the transmitting, receiving, decoding, storing, and changing operations are performed by a single multiple-input-multiple-output (MIMO) wireless device.
3. (Original) The method of claim 1, wherein the transmitting, receiving, decoding, storing, and changing operations are performed for each AGC gain setting.
4. (Previously presented) The method of claim 1, wherein transmitting said calibration signal comprises transmitting a single frequency centered on a fast Fourier transformer bin.
5. (Previously presented) The method of claim 1, further comprising generating said calibration signal by applying a non-zero coefficient to an inverse fast Fourier transformer.

6. (Original) The method of claim 1, wherein decoding the calibration signal comprises using a fast Fourier transformer.
7. (Original) The method of claim 1, further comprising accessing the measurement to improve AGC performance.
8. (Original) The method of claim 1, further comprising normalizing the measurement.
9. (Previously presented) The method of claim 1, wherein transmitting said calibration signal comprises prepending a cyclic prefix to the calibration signal.
- 10.-21. (Canceled).
22. (New) A Multiple Input Multiple Output (MIMO) -based system, comprising:
  - an adjustable gain amplifier that receives a wireless transmission comprising a calibration signal; and
  - a digital processing device that comprises an automatic gain control (AGC) coupled to the adjustable gain amplifier, the AGC controls a gain of the adjustable gain amplifier;wherein the AGC iteratively changes the gain of the adjustable gain amplifier to each of a plurality of gain settings; and  
wherein the digital processing logic iteratively decodes the calibration signal for each of the plurality of gain settings to produce a plurality of measurements that are stored and used to identify a target AGC gain setting.
23. (New) The MIMO-based system of claim 22, wherein the calibration signal comprises a single frequency centered on a fast Fourier transformer bin.

24. (New) The MIMO-based system of claim 22, further comprising a transmitter that generates the calibration signal.
25. (New) The MIMO-based system of claim 24, wherein the calibration signal is generated by applying a non-zero coefficient to an inverse fast Fourier transformer.
26. (New) The MIMO-based system of claim 22, wherein the digital processing logic decodes the calibration signal using a fast Fourier transformer.
27. (New) The MIMO-based system of claim 22, wherein the digital processing logic further accesses the plurality of measurements to improve AGC performance.
28. (New) The MIMO-based system of claim 22, wherein the digital processing logic further normalizes the plurality of measurements.
29. (New) The MIMO-based system of claim 22, wherein the calibration signal comprises a prepended cyclic prefix.
30. (New) A Multiple Input Multiple Output (MIMO) -based system, comprising:  
means for receiving a calibration signal;  
means for decoding the calibration signal to produce a plurality of measurements,  
and for processing the produced plurality of measurements; and  
means for changing a gain of the means for receiving;  
wherein the means for changing iteratively changes the gain of the means for receiving to each of a plurality of gain settings; and  
wherein the means for decoding and for processing decodes the calibration signal for each of the plurality of gain settings to produce the plurality of measurements that are used to identify a desired gain setting.

31. (New) The MIMO-based system of claim 30, further comprising means for transmitting the calibration signal.
32. (New) The MIMO-based system of claim 30, further comprising means for storing the measurement.
33. (New) The MIMO-based system of claim 30, wherein the means for decoding and for processing decodes the calibration signal using a fast Fourier transformer.
34. (New) The MIMO-based system of claim 30, wherein the means for decoding and for processing further accesses the plurality of measurements to improve AGC performance.
35. (New) The MIMO-based system of claim 30, wherein the means for decoding and for processing further normalizes the plurality of measurements.